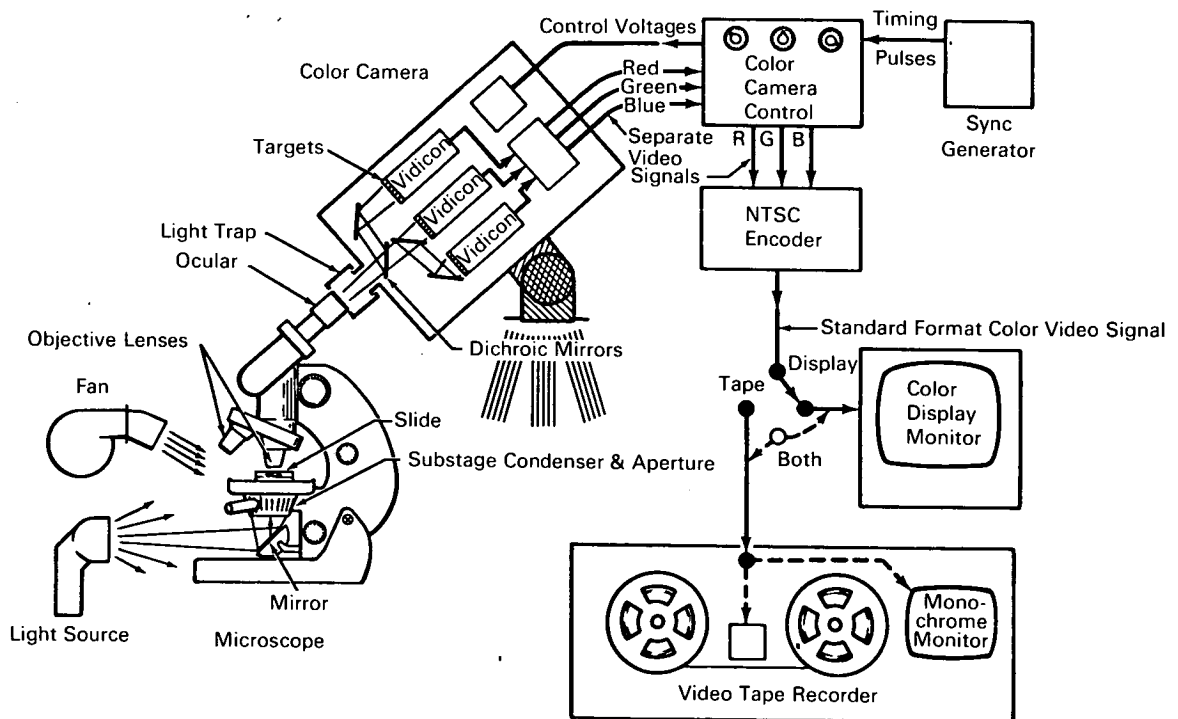


# NASA TECH BRIEF



NASA Tech Briefs are issued to summarize specific innovations derived from the U.S. space program, to encourage their commercial application. Copies are available to the public at 15 cents each from the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151.

## Color-Televised Medical Microscopy



An investigation has been made into the feasibility of color-television microscopy for use at laboratory-range magnifications to reproduce a slide image with sufficient fidelity for medical laboratory or instructional use.

The arrangement of the system is as illustrated and uses an external light source and substage mirror to illuminate the slide, and a blower directed at the microscope stage to dissipate lamp-generated heat. The slide's real image, formed by the microscope optics, is projected through the lens opening into the color television camera with the camera lens removed.

Dichroic mirrors at the camera's optical input separate the image into its red, green, and blue components and direct them to the photosensitive targets of three vidicon tubes, which act as optical-to-video transducers. Synchronous scanning of these targets produces three video signals corresponding to the optical image's red, green, and blue components.

After processing by the color camera control unit, the three video signals are combined into a single color television signal in the standard National Television System Committee (NTSC) format by the NTSC encoder. From the NTSC encoder, the encoder video

(continued overleaf)

signal is routed either to the display monitor for real time viewing, or to the video tape recorder for storage, or to both.

**Notes:**

1. All major equipment items in the system are standard, commercially available units.
2. Many applications for the use of color-television microscopy suggest themselves. Medical education implementation, instant pathology reporting between operating room and remotely located pathologist viewing a biopsy through this medium, and computerized comparison of chromosome patterns from the digitized video signals with a pattern recognition program are some possibilities.

3. Microscope slides have been successfully color televised at X970 (oil immersion) magnification.
4. Inquiries concerning this innovation may be directed to:

Technology Utilization Officer  
Manned Spacecraft Center  
Houston, Texas 77058  
Reference: B68-10314

**Patent status:**

No patent action is contemplated by NASA.

Source: John C. Peck and Marshall A. Heath  
(MSC-13086)